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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,628	02/01/2006	Shmuel Roth	P-6042-US	5934

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EXAMINER	
PATEL, VIPIN	
ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/566,628	ROTH, SHMUEL	
	Examiner	Art Unit	
	Vipin M. Patel	~~2809~~ 2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-20,22 and 23* is/are pending in the application.

4a) Of the above claim(s) *2,21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-20,22 and 23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 February 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. This action is in response to the application filed on 02/01/2206 and it is 371 of PCT/IL04/00711 08/03/2004.

DETAILED ACTION

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) The invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claim 1,3-20,22,23 rejected under 35 U.S.C. 102(a) as being unpatentable over Tomita et al. US 2004/0130682.

Consider claim 1 Tomita et al. teaches: A display device for producing a color image using four or more primary colors (An Image display apparatus Abstract-Line 1), Comprising: four or more transmissive spatial modulators (Paragraph [0157], the liquid crystal panels in the driving circuit system shown in FIG. 13 and FIG. 9 are the liquid crystal panels of the transmission type) to modulate four or more, respective, light beams in accordance with four or more, respective, primary color image components of said color image to produce four or more, respective, modulated light beams (Paragraph [0195] optically modulate the light fluxes of R, G, B, and Cy):

and a prism block combiner (Paragraph [0102] cross dichroic prism 31,33 Fig. 9)

and to combine said four or more modulated light beams into a combined light beam (Paragraph [0106], modulated light fluxes R, G, Cy, and B can be introduced into the projection lens 25 in a state wherein they are synthesized as a single light flux ~ display image light).

Consider Claim 3, Tomita et al. teaches: The device of claim 1, wherein said prism block combiner comprises: an X-cube to combine three of said, four or more modulated

light beams into a three-color light beam; and a dichroic cube to combine a fourth modulated light beam of said four or more modulated light beams with said three-color light beam (Paragraph [0102] cross dichroic prism 31,33 and Fig. 9 shows the combining the beam R, G, B, and CY).

Consider Claim 4. Tomita et al. teaches: The device of claim 3, wherein said X-cube comprises two dichroic-coated surfaces, and wherein said dichroic cube comprises a dichroic-coated surface (Paragraph [0102] cross dichroic prism 31,33).

Consider claim 5. Tomita et al. teaches: The device of claim 1, wherein said prism block combiner includes five optical elements, each optical element having at least one dichroic-coated surface (Fig. 11 shows 5 optical elements with dichroic surface).

Consider claim 6. Tomita et al. teaches: The device of claim1, wherein said prism block combiner comprises: a first dichroic-coated surface to combine first and second modulated light beams of said four or more modulated light beams into a first two-color light beam (Figure 12, Optical element 65 and dichroic surface labeled 65a combines red and green modulated signal into a two color signal); and
a second dichroic-coated surface to combine third and fourth modulated light beams of said four or more modulated light beams into a second two color light beam (Figure 12, element 66 and dichroic surface labeled 66a combines blue and Cy modulated signal into a two color signal);.

Consider claim 7. Tomita et al. teaches: Incorporate claim 6, a third dichroic coated surface adapted to combine said first and second two-color light beams (Figure 12, element 67 and dichroic surface labeled 67a combines both two color signals).

Consider claim 10. Tomita et al. teaches: The device of claim 1, wherein at least one of said transmissive spatial light modulators comprises a transmissive liquid crystal display panel (Paragraph [0157], the liquid crystal panels in the driving circuit system shown in FIG. 13 and FIG. 9 are the liquid crystal panels of the transmission type).

Consider Claim 11. Tomita et al. teaches: The device of claim 1, wherein said four or more light beams comprise four or more, respective, primary color light beams, having

spectral ranges corresponding to said four or more primary colors, respectively (Fig. 2 shows chromaticity diagram for four colors R, G, B, and CY).

Consider claim 12. Tomita et al. teaches: The device of claims 1, comprising a spectrum-splitting arrangement to split light of an illumination source into said four or more primary color light beams (Fig. 7 shows the spectrum-splitting arrangement. Paragraph [0089] The light paths of the light fluxes R, G, Cy, and B of the color components obtained by separating the white light from the light source 1).

Consider claim 13. Tomita et al. teaches: The device of claim 12, wherein said spectrum-splitting arrangement comprises a plurality of dichroic mirrors to separate light of said illumination source into said four or more primary color light beams (Paragraph [0088] with reference to FIG. 7 is a configuration of a basic concept. The order in arrangement of the dichroic mirrors for color separation on the optical axis of a light flux emitted from the light source 1.)

Consider claim 14. Tomita et al. teaches: The device of claims 11, comprising one or more folding mirrors to direct one or more of said four or more primary color light beams onto one or more of said transmissive spatial light modulators (Paragraph [0089] Arrange in such a manner are changed, if necessary, by mirrors or the like so that they may be introduced in required directions into optical modulation devices (liquid crystal panels) corresponding to the individual colors).

Consider claim 15. Tomita et al. teaches: The device of claim 1, wherein said four more modulated light beams travel substantially the same distance in said prism block combiner (Paragraph [0131] discloses that all the color light beams travel equal distance).

Consider Claim 16. Tomita et al. teaches: The device claim 1 Comprising a projection lens to project said combined light beam onto a screen (Paragraph [0126] the optically modulated light fluxes R, G, B, and Cy are synthesized into one light flux, which is introduced into the projection lens 25).

Consider claim 17. Tomita et al. teaches: The device of claim 1 comprising controller able to separately said spatial light modulators to produce a four Or more transmissive patterns corresponding to four or more primary components, respectively, of a signal representing said color image (Fig. 13 indicates the switching control signal generation section controlling the signal going to panels).

Consider claim 18. Tomita et al. teaches: The device of claim 17 comprising a converter to convert a three-primary color input signal into the signal representing said color image (Paragraph [0126] the optically modulated light fluxes R, G, B, and Cy are synthesized into one light flux, which is introduced into the projection lens 25).

Consider Claim 19. Tomita et al. teaches: (A method of producing a color image using four or more primary colors comprising: modulating four or more primary color light beams using four, respective, transmissive spatial light modulators in accordance with four or more, respective, primary color image components of said color image to produce four or more, respective, modulated light beams (Paragraph [0091], The light fluxes R, G, Cy, and B of the color components separated by the color separation optical system as described above are introduced into the optical modulation devices respectively corresponding to the color components and are optically modulated by the optical modulation devices.; and
combining Said four Or more modulated light beams by a prism block combiner to produce a combined light beam. (Paragraph [0091], The optically modulated light fluxes of the colors are synthesized by the color synthesis optical system).

Consider claim 20. Tomita et al. teaches: The method of claim 19, comprising splitting light of an illumination source into said four or more primary color light beams (Fig. 7 shows the spectrum-splitting arrangement. Paragraph [0089] The light paths of the light fluxes R, G, Cy, and B of the color components obtained by separating the white light from the light source 1).

Claim 22. Tomita et al. teaches: The method of claim 19, wherein combining said four or more modulated light beams comprises:

combining three of said four or more modulated light beams into a three-color light beam; and

combining a fourth modulated light beam of said four or more modulated light beams and said three-color light beam into said combined light beam (Paragraph [0102] cross dichroic prism 31, and dichroic prism 33 and Fig. 9 shows the combining the beam R, G, B, and CY).

4. Claim 8,9, 23 rejected under 35 U.S.C. 102(a) as being unpatentable over Roddy et al. US 20040070736 A1.

Consider claim 8. Roddy et al. teaches: The device, wherein said prism block combiner comprises a dichroic-coating X-configuration adapted to combine said first and second two-color light beams. (Fig 8. Indicates 3 elements labeled 30 and X-Cube labeled 32 configure to combine 5 or more optical signal in to one signal.)

Consider claim 9. Roddy et al. teaches: The device of claim 1, wherein said four or more primary colors comprise five or more primary colors, wherein said four or more spatial light modulators comprise five or more spatial light modulators, respectively, and wherein said prism block combiner comprises: a first dichroic-coated surface (Figure-8, element 30 on left side of X-cube) to combine the modulated light beams of first and second modulators of said five or more modulators into a first two-color light beam; a second dichroic-coated surface (Figure-8, element 30 on right side of X-cube) to combine the modulated light beams of third and fourth modulators of said five or more modulators into a second two-color light beam; and

a dichroic-coating X-configuration (Figure-8, element 32, X-cube) adapted to combine said first and second two-color light beams and the modulated light beam (Figure 8, light beam projected from element 30 located below element 32) of a fifth spatial light modulator of said five or more Spatial light modulators.

Consider claim 23. Roddy et al. teaches: The method of claim 19, wherein said four or more primary colors comprise five or more primary colors, and wherein combining said five or more primary colors comprises:

combining three of said five or more modulated light beams into a three-color light

beam; and combining said three-color light beam and fourth and fifth modulated light beams of said five or more modulated light beams into said Combined light beam (Figure 8 shows the method of combining three light beam into one light beam and two light beam into one light beam.).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tomita et al., US 2004/0130682 A1.

Ishizaka et al., US 7,198,371 B2

Agostinelli et al., US 2004/0075817 A1

Young et al., US 2007/0103646 A1

Kim et al., US 2004/0233342 A1

Roth, Shmuel, WO 2006/056995 A2

Roddy et al. 2004/0070736 A1

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vipin M. Patel whose telephone number is (571) 270-1742. The examiner can normally be reached on Monday through Friday, 7:30AM to 5:00PM E.S.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bruce can be reached on (571) 272-2487. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

VP

DAVID BRUCE
SUPERVISORY PATENT EXAMINER

Vipin Patel